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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/660,138	09/12/2000	Chang-Meng Hsiung	18564005810	6548

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EXAMINER

SINES, BRIAN J

ART UNIT	PAPER NUMBER
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1743

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DATE MAILED: 09/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/660,138

Applicant(s)

HSIUNG, CHANG-MENG

Examiner

Brian J. Sines

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 24 and 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-25 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1 – 23, drawn to a sensor array device and a method of monitoring and evaluating the sensor array device, classified in class 422, subclass 98.
- II. Claims 24 and 25, drawn to a computer program that calculates the uniformity of an infrared detector output, classified in class 382, subclass 232.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as in the evaluation of an infrared detector output or an infrared camera image. Claim 24 does not specifically recite the combined use of the computer program with a sensor array device. See MPEP § 806.05(d).

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Joseph Snyder on 9/4/2002, a provisional election was made with traverse to prosecute the invention of group I, claims 1 – 23. Affirmation of this election must be made by applicant in replying to this Office action.

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Claims 24 and 25 are withdrawn from further consideration by the examiner, 37

CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 19 – 23 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Regarding claim 19, the specification is unclear as to how the thermographic image of the sensor is evaluated in assessing the “quality” of the manufactured sensor. What characteristics of the “conducting path” of the sensor are evaluated in determining the “quality” of the sensor? Regarding claim 22, the specification is unclear as to how the conducting path of the sensor is identified using the thermographic image of the sensor. What characteristics of the thermographic image identify the conducting path of the sensor?

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 19 – 23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claims 19 and 22 provide for the use of a thermographic image, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced. Regarding claim 19, what are the characteristics evaluated and steps involved in the analysis of the thermographic image of the sensor which indicate the "quality" of the sensor? Regarding claim 22, What characteristics of the thermographic image identify the conducting path of the sensor?

Claims 19 and 22 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 – 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. (U.S. Pat. No. 6,319,724 B1) in view of Mansky et al. (U.S. Pat. No. 6,438,497 B1). Regarding claims 1 – 3, Lewis et al. teach an apparatus comprising an array of sensors. Lewis et al. teach that the apparatus may further comprise a detector operatively associated with each sensor that provides a response in the presence of an analyte (col. 4, lines 20 – 65). Lewis et al. do teach that the sensors in the array may comprise infrared sensors (col. 7, lines 6 – 24). Lewis et al. do teach analyte detection systems comprising sensor arrays, a measuring device for detecting responses across each sensor, a computer, a display, a data structure of sensor array response profiles and a comparison algorithm or comparison tables are provided (col. 7, lines 45 – 65). Lewis et al. do not specifically teach an infrared detector operatively associated with each sensor, in which the infrared detector measures a response in the presence of an analyte. Mansky et al. do teach the use of an infrared detector, or camera, with an array of sensors. Therefore, it would have been obvious to one of ordinary skill in the art to incorporate an optical sensing device, such as an infrared camera, as taught by Mansky et al., with the detection apparatus comprising a sensor array, as taught by

Lewis et al., in order to provide for an effective measuring means for the sensor array. Regarding claim 4, Mansky et al. teach that the infrared detector measures a matrix of responses from the sensor array (col. 12, lines 45 – 67). Regarding claim 5, Lewis et al. teach that the sensor array may comprise up to about 10^6 sensors (col. 7, lines 25 – 44). It would have been obvious to one of ordinary skill in the art to construct a sensor array, as taught by Lewis et al., to comprise a matrix of 256×256 , since the Courts have held that the mere duplication of parts, without any new or unexpected results, is within the ambit of one of ordinary skill in the art. See *In re Harza*, 124 USPQ 378 (CCPA 1960). Regarding claim 6, Lewis et al. teach that the sensor array may comprise a Pd-gate MOSFET device (col. 7, lines 6 – 24). Regarding claim 7, Lewis et al. teach that the sensor array may comprise sensors comprised of conducting and nonconducting regions (col. 7, lines 25 – 44). Regarding claim 8, Lewis et al. teach that the apparatus may further comprise a computer having a resident comparison program or algorithm (col. 7, lines 45 – 65). Regarding claim 9, Lewis et al. teach the use of pattern recognition algorithms, such as principle component analysis (col. 14, lines 1 – 40). Regarding claim 10, Lewis et al. teach that the analyte may be alkanes (col. 12, lines 20 – 32). Regarding claim 11, Lewis et al. teach that the analyte may comprise a microorganism marker gas (col. 8, lines 12 – 65; col. 9, lines 41 – 51; col. 12, lines 39 – 45). Regarding claim 12, Lewis et al. teach that the sensor array may be used in an application such as environmental toxicology (col. 10, lines 49 – 67, col. 11, lines 1 – 51; Table 1). Regarding claim 13, it would have been obvious to one of ordinary skill in the art to further utilize a robotic armature incorporated with the sensor array device for

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high throughput assay screening, since the Courts have held that to provide a mechanical or automatic means to replace manual activity, which accomplishes the same result is within the ambit of one of ordinary skill in the art. See *In re Venner*, 120 USPQ 192 (CCPA 1958). Regarding claims 14 and 15, Lewis et al. teach a sensor array comprising of 32 to 1,000 or more sensors (col. 7, lines 25 – 44). Regarding claim 16, Lewis et al. teach that at least two sensors may be compositionally different (col. 7, lines 36 – 44). Regarding claim 17, Lewis et al. teach that the sensor array may be apart of a handheld device (col. 5, lines 34 – 46). Regarding claim 18, Lewis et al. teach that the fluid under analysis may be a gas, such as a breath sample (col. 3, lines 5 – 57).

Conclusion

Claims 1 – 23 are rejected.

Claims 24 and 25 are withdrawn from further consideration.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lewis et al. '401 and '244 teach sensor arrays for detecting analytes in fluids. Hedengren et al. '867 teach a thermal sensor array. Thundat et al. '124 teach an electromagnetic and nuclear radiation detector using micromechanical sensors. Lewis et al. '096 teach the trace level detection of analytes using artificial olfactometry.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Sines whose telephone number is (703) 305-


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0401. The examiner can normally be reached on Monday - Friday (11:30 AM - 8 PM EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (703) 308-4037. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

BJS
September 4, 2002


Jill Warden
Supervisory Patent Examiner
Technology Center 1700